

Claims:

1. A method of managing distributed statistical data retrieval in a network device,
comprising:
 - a. gathering statistical data on at least one card within the network device periodically;
 - 5 b. sending a predetermined number of packets from the card to the central process,
wherein each packet includes at least a portion of the statistical data;
 - c. sending an acknowledge request to the central process in conjunction with sending
the last packet in the predetermined number; and
 - d. controlling the number of packets sent from the card to the central process,
 - 10 including:
sending an acknowledge packet from the central process to the card; and
repeating steps b, c and d when the acknowledge packet is received at the card.
2. The method of claim 1, wherein sending an acknowledge request to the central process
15 in conjunction with sending the last packet in the predetermined number, comprises:
sending the acknowledge request embedded within the last packet in the predetermined
number.
3. The method of claim 1, wherein sending an acknowledge request to the central process
20 in conjunction with sending the last packet in the predetermined number, comprises:
sending the acknowledge request in an acknowledge request packet separate from the
last packet in the predetermined number.
4. The method of claim 1, wherein sending an acknowledge packet from the central
25 process to the card, comprises:
detecting an acknowledge request at the central process in a packet received from the
card; and
sending the acknowledge packet to the card from the central process.
5. The method of claim 1, wherein sending an acknowledge packet from the central
30 process to the card, comprises:
detecting an acknowledge request at the central process in a packet received from the
card;
determining a number of packets to be processed by the central process;

comparing the number of packets to be processed to a predetermined threshold periodically; and

sending the acknowledge packet to the card from the central process when the number of packets to be processed is less than the predetermined threshold.

5

6. The method of claim 1, wherein sending an acknowledge packet from the central process to the card, comprises:

detecting an acknowledge request at the central process in a packet received from the card;

10

determining a number of packets to be processed by the central process;

comparing the number of packets to be processed to a predetermined threshold;

estimating when the number of packets to be processed will be below the predetermined threshold; and

15

sending the acknowledge packet from the central process to the card indicating a time that the card may resume sending packets to the central processor.

7. The method of claim 6, wherein if the number of packets to be processed is below the predetermined threshold, then the indicated time is immediately.

20

8. The method of claim 1, wherein gathering statistical data on at least one card within the network device periodically, comprises:

gathering a current statistical data sample on the card periodically at a first period.

25

9. The method of claim 8, wherein gathering statistical data on at least one card within the network device periodically further comprises:

adding the current statistical data sample to a data summary each time the current statistical data sample is gathered.

30

10. The method of claim 9, wherein sending packets from the card to a central process comprises:

sending packets containing at least a portion of the current statistical data sample from the card to the central process periodically at a first period; and

sending packets containing at least a portion of the data summary from the card to the central process periodically at a second period.

11. The method of claim 10, wherein, in normal operation, the second period is longer than
5 the first period.

12. The method of claim 1, wherein the card is a first card and the statistical data is first statistical data and wherein the method further comprises:

d. gathering second statistical data on a second card within the network device
10 periodically;

e. sending the predetermined number of packets from the second card to the central process, wherein each packet includes at least a portion of the second statistical data; and

f. sending an acknowledge request to the central process in conjunction with sending the last packet in the predetermined number; and

15 g. controlling the number of packets sent from the second card to the central process, including:

sending an acknowledge packet from the central process to the second card; and

repeating steps e, f and g when the acknowledge packet is received at the second card.
20

13. The method of claim 1, wherein the statistical data is first statistical data and wherein the method further comprises:

d. gathering second statistical data on the card periodically; and

e. sending the predetermined number of packets from the card to the central process,
25 wherein each packet includes at least a portion of the second statistical data;

f. sending an acknowledge request to the central process in conjunction with sending the last packet in the predetermined number; and

g. controlling the number of packets including a portion of the second statistical data sent from the card to the central process, including:

30 sending an acknowledge packet from the central process to the card; and

repeating steps e, f and g when the acknowledge packet is received at the card.

14. A method of managing distributed statistical data retrieval in a network device, comprising:

a. gathering statistical data on a plurality of cards within the network device

periodically;

5 b. sending a predetermined number of packets from each card to the central process, wherein each packet includes at least a portion of the statistical data; and

c. sending an acknowledge request from each card to the central process in conjunction with sending the last packet in the predetermined number; and

d. controlling the number of packets sent from the cards to the central process,

10 including:

 sending an acknowledge packet from the central process to each card; and

 repeating steps b, c and d when the acknowledge packet is received at each card.

15 15. The method of claim 14, wherein sending an acknowledge request from each card to the central process in conjunction with sending the last packet in the predetermined number, comprises:

 sending the acknowledge request from each card embedded within the last packet in the predetermined number.

20 16. The method of claim 14, wherein sending an acknowledge request from each card to the central process in conjunction with sending the last packet in the predetermined number, comprises:

 sending the acknowledge request from each card in an acknowledge request packet separate from the last packet in the predetermined number.

25

17. The method of claim 14, wherein sending an acknowledge packet from the central process to each card, comprises:

 detecting an acknowledge request at the central process in a packet received from one of the cards; and

30 sending the acknowledge packet to that card from the central process.

18. The method of claim 14, wherein sending an acknowledge packet from the central process to each card, comprises:

detecting an acknowledge request at the central process in a packet received from one of the cards;

determining a number of packets to be processed by the central process;

comparing the number of packets to be processed to a predetermined threshold

5 periodically; and

sending the acknowledge packet to that card from the central process when the number of packets to be processed is less than the predetermined threshold.

10 19. The method of claim 14, wherein sending an acknowledge packet from the central process to each card, comprises:

detecting an acknowledge request at the central process in a packet received from one of the cards;

determining a number of packets to be processed by the central process;

comparing the number of packets to be processed to a predetermined threshold;

15 estimating when the number of packets to be processed will be below the predetermined threshold; and

sending the acknowledge packet from the central process to the card indicating a time that that card may resume sending packets to the central processor.

20 20. The method of claim 14, wherein gathering statistical data on a plurality of cards within the network device periodically, comprises:

gathering a current statistical data sample on each card periodically at a first period.

25 21. The method of claim 20, wherein gathering statistical data on a plurality of cards within the network device periodically further comprises:

adding the current statistical data sample to a data summary on each card each time the current statistical data sample is gathered.

30 22. The method of claim 21, wherein sending a predetermined number of packets from each card to the central process comprises:

sending packets containing at least a portion of the current statistical data sample from each card to the central process periodically at a first period; and

sending packets containing at least a portion of the data summary from each card to the central process periodically at a second period.

5 23. The method of claim 22, wherein, in normal operation, the second period is longer than the first period.

24. A method of managing distributed statistical data retrieval in a network device,
comprising:
gathering a plurality of different types of statistical data on at least one card within the
10 network device periodically; and
sending groups of packets from the card to the central process at staggered times,
wherein each group of packets includes one of the different types of statistical data.

15 25. The method of claim 24, wherein gathering a plurality of different types of statistical data on at least one card, comprises:
gathering each of the different types of statistical data at a different time.